

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-14. (Canceled)

15. (Currently amended) A method for copying data from a first physical page in a memory that is directly accessible to input/output devices to a second physical page in the memory, the method comprising:

requiring that each input/output device first register an access to the memory by a physical address of the memory prior to the access of the memory, the input/output devices registering the access by recording a source of data in the memory being accessed and the physical address of each physical page of the memory being accessed, the recording being made in a page mapping structure;

obtaining a lock on a page mapping structure corresponding to the first physical page thereby preventing new accesses to the first physical page by one of the input/output devices;

disabling access by registered devices to the memory by signaling the registered devices to halt access to physical address space, the registered devices being devices that have registered for access to the first physical page using the page mapping structure;

copying the data from the first physical page to the second physical page; and

enabling access to the second physical page in the memory by signaling the registered input/output devices to resume accessing the physical address space and by releasing the lock on the page mapping structure.

16-17. (Canceled)

18. (Previously presented) The method of claim 15, further comprising disabling application memory access prior to the copying.

19. (Canceled)

20. (Previously presented) The method of claim 15, wherein the copying of the page includes updating a record in the page mapping structure.

21. (Previously presented) The method of claim 15, wherein the signaling of the registered devices to halt access includes accessing a pre-relocation method and the signaling of the registered devices to resume accessing the physical address space includes accessing a post-relocation method.

22. (Previously presented) The method of claim 15, wherein the input/output devices access the memory via direct memory access.

23. (Currently amended) A machine readable medium for copying data from a first physical page in a memory that is directly accessible to input/output devices to a second physical page in the memory, the machine readable medium comprising:

program instructions for each input/output device causing the input/output device to first register an access to the memory by a physical address of the memory prior to the access of the memory, the input/output devices registering the access by recording a source of data in the memory being accessed and the physical address of each physical page of the memory being accessed, the recording being made in a page mapping structure;

program instructions for obtaining a lock on a page mapping structure corresponding to the first physical page thereby preventing new accesses to the first physical page by one of the input/output devices;

program instructions for disabling access by registered devices to the memory by signaling the registered devices to halt access to physical address space, the registered devices being devices that have registered for access to the first physical page using the page mapping structure;

program instructions for copying the data from the first physical page to the second physical page; and

program instructions for enabling access to the second physical page in the memory, by signaling the registered input/output devices to resume accessing the physical address space and by releasing the lock on the page mapping structure.

24. (Currently amended) The machine readable medium of ~~claim 22~~ claim 23, further comprising program instructions for disabling application memory access ~~prior~~ access prior to the copying.

25. (Currently amended) The machine readable medium of ~~claim 22~~ claim 23, wherein the copying of the page includes updating a record in the page mapping structure.

26. (Currently amended) The machine readable medium of ~~9+claim 22~~ claim 23, wherein the signaling of the registered devices to halt access includes accessing ~~one of~~ a pre-relocation method and the signaling of the registered devices to resume accessing the physical address space includes accessing a post-relocation method.

27. (Currently amended) The machine readable medium of ~~claim 22~~ claim 23, wherein the input/output devices access the memory via direct memory access.